

A One-Year Follow-up of Fatigued Patients

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To better understand the complaint "fatigue" and the characteristic features of patients who present with this problem, a one-year follow-up study was performed in a county health center. One hundred-fifteen fatigued adults were identified using scores on the Rand Index of Vitality (RIV). One hundred thirty-nine patients of similar age, sex, and socioeconomic status were identified as nonfatigued. One year later, these patients were followed up with a chart review, reassessment of fatigue (by RIV score), and a telephone interview. Seventy-three (64 percent) fatigued and 72 (53 percent) nonfatigued patients provided this information. On the RIV, 31 patients moved from the fatigued group to nonfatigued, and 15 nonfatigued patients' scores changed to the fatigued category.

Patients categorized as fatigued in 1984 (by RIV score) returned for office visits more often (mean of 3.85 vs 2.51, $P < .05$), and developed significantly more new diagnoses (2.75 vs 1.68, $P < .05$) over the follow-up year, compared with those not fatigued. Fatigued patients also had a greater proportion of diagnoses containing a psychologic component than nonfatigued patients.

Persistence of fatigue over the year was significantly associated with race and education (nonwhites and those completing high school remaining fatigued). No significant association between marital status, age, sex, employment status, and either the resolution or development of fatigue over the year was found.

Fatigue can signal boredom, overwork, a psychological or physical disease, or a combination of problems. The causes of fatigue can be as trivial as an upper respiratory tract infection or as devastating as metastatic carcinoma. Common problems are common causes of fatigue. Anxiety and depression, viral infections, and cardiovascular and endocrine disorders rank at the top of the list of identified causes.

The longer the complaint persists without a specific identified cause, the greater the likelihood that a psychological cause is responsible.¹ Women are more likely than men to complain of fatigue to their physicians; and the complaint is evaluated differently in men and women.² A recent study in a university family health center found the prevalence of fatigue was inversely related to years of formal education.³

Largely neglected as a topic of research in primary care, fatigue has aroused recent interest.⁴⁻⁷ Most fatigue studies have been retrospective or short-term prospective.^{1,3,5,8-11}

Macy and Allen's¹² 1933 report is an exception. During an average 6.5-year follow-up period, only 6 percent of 235 patients followed for "chronic nervous exhaustion" developed diagnoses that could have accounted for their original complaint. Although long-term, this study, based on chart review, excluded patients who did not return for follow-up.

To define guidelines that distinguish fatigued from nonfatigued patients, and to determine whether the complaint itself is a warning or risk factor for future illness, a one-year follow-up study of ambulatory patients seeking care at a county health center was performed. The features associated with persistence, appearance, or disappearance of fatigue were investigated by cross-tabulating change in fatigue status with patients' demographic characteristics, diagnoses, and frequency of visits.

METHODS

The Coram Health Center, operated by Suffolk County, New York, is affiliated with the State University Hospital at Stony Brook, and its patient catchment area consists of the surrounding 17 communities. Patients usually select the Coram Health Center as an alternative to private care.

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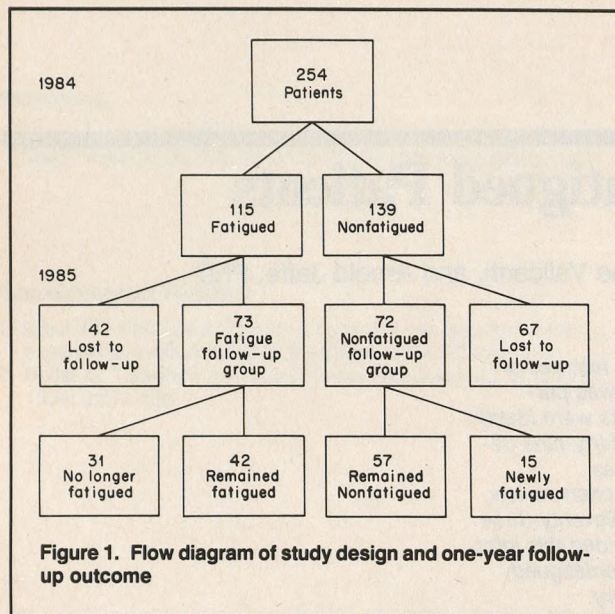


Figure 1. Flow diagram of study design and one-year follow-up outcome

A questionnaire was administered to 254 randomly selected adult patients at the Coram Health Center during the months of July and August 1984. Included were demographic items and the Rand Index of Vitality (RIV). A description of this instrument and the methods used to assess its validity, power, and reliability has previously been published (Appendix).¹³ One hundred-fifteen patients scored 14 or less on the RIV and were classified as fatigued. One hundred thirty-nine were not fatigued (RIV score of 15 to 24).

One year later the fatigued and nonfatigued patients were contacted by telephone (questionnaires were mailed to patients not reached by two daytime and one evening call). In addition to a chart review for new and old diagnoses and an interview to determine demographic changes or diagnoses unrecorded in their clinic chart, the subjects were given the RIV for the second time. Seventy-three (64 percent) fatigued patients (as determined by 1984 RIV score) and 72 (53 percent) nonfatigued patients completed this information. Patients were assigned to fatigued and nonfatigued groups based on 1984 Rand Index scores (Figure 1). In 1985 they were tested again and classified as "remained fatigued," "no longer fatigued," "remained nonfatigued," and "newly fatigued" on the basis of comparisons between 1984 and 1985 scores.

RESULTS

Follow-up Group

Follow-up data collection was accomplished on 145 patients (59 percent of the original sample of 254 patients). The characteristics of the follow-up group closely resemble

TABLE 1. 1985 FOLLOW-UP STUDY POPULATION (n = 145)

Patient Characteristics	Number	Percent
Sex		
Male	41	28.3
Female	104	71.7
Age (years)		
18-20	8	5.5
21-30	51	35.2
31-40	24	16.6
41-50	11	7.6
51-60	15	10.3
61+	36	24.8
Race		
Nonwhite	28	19.3
White	117	80.7

TABLE 2. NUMBER OF VISITS AND DIAGNOSES OVER A ONE-YEAR FOLLOW-UP

1984 Status*	Mean	Standard Deviation	t	Significance
Visits				
Nonfatigued	2.51	0.29	2.54	P < .05
Fatigued	3.85	0.44		
Number of Diagnoses				
Nonfatigued	1.68	1.41	4.15	P < .05
Fatigued	2.75	1.69		

* As measured by Rand Index of Vitality score

the composition of the Coram Health Center population for sex, age distribution, and race (Table 1).

Comparing patients who were followed up and those lost to the study, there were no significant differences in sex, race, employment status, educational status, marital status, or RIV scores. There was a disproportionately greater number of older patients among those followed up ($\chi^2 = 18.62, P < .01$) than among those lost to follow-up.

Comparison of Fatigued With Nonfatigued Patients

The numbers of office visits and new diagnoses were compared between patients classified as fatigued or nonfatigued based on 1984 RIV scores (Table 2). The fatigued patients returned for a total of 281 office visits, compared with 181 visits in those patients classified as nonfatigued. During the follow-up study year, the fatigued group had 3.85 mean visits and the nonfatigued group had 2.51 visits ($t = 2.54, P < .05$).

During the same period, the fatigued group was given 201 new diagnoses, while the nonfatigued group received 121. The fatigued group had a mean of 2.75 new diagnoses, the nonfatigued group 1.68 ($t = 4.15, P < .05$). The frequencies of physical and psychological diagnoses in both groups were also tallied (Table 3). Fatigue was significantly associated with the presence of psychological

TABLE 3. TYPES OF DIAGNOSES RECORDED DURING ONE-YEAR FOLLOW-UP (n = 145 patients)

1984 Status*	Physical Diagnoses No. (%)	Psychological Diagnoses No. (%)	Combined Physical and Psychological Diagnoses No. (%)
Nonfatigued	53 (93.0)	2 (3.5)	2 (3.5)
Fatigued	49 (72.1)	2 (2.9)	17 (25.0)

$\chi^2 = 11.12, P < .01$

* As measured by Rand Index of Vitality score
 Note: Twenty subjects did not receive a new diagnosis over the follow-up period

TABLE 4. LEVEL OF EDUCATION AND RACE OF FATIGUED PATIENTS FOLLOWED FOR ONE YEAR (n = 73)

Demographic Characteristics	Remained Fatigued* No. (%)	No Longer Fatigued* No. (%)
Education		
Less than high school	8 (19.0)	14 (45.2)
High school graduate	28 (66.7)	15 (48.4)**
College graduate	6 (14.3)	2 (6.5)
Race		
Nonwhite	12 (28.6)	1 (3.2)
White	30 (71.4)	30 (96.8)***

* As measured by 1984 Rand Index of Vitality score
 ** $\chi^2 = 6.05, P < .05$
 *** $\chi^2 = 6.19, P < .05$

diagnoses (either alone or in combination with a physical diagnosis) in the subsequent year ($\chi^2 = 11.12, P < .01$). In all, 27.9 percent of fatigued patients had some psychological diagnosis compared with 7.0 percent of the nonfatigued group.

Race, sex, age, employment, marital, and educational status of the fatigued group showed no statistically significant differences when compared with those not fatigued.

Change in Fatigue Status

The study population was divided by 1984 RIV scores into fatigued and nonfatigued groups. Members of the fatigued group either improved (no longer fatigued) or remained fatigued. Over the one-year follow-up, the nonfatigued group either became fatigued (newly fatigued) or remained nonfatigued. After one year, 31 patients changed from fatigued to nonfatigued, while 15 patients moved in the opposite direction. Ninety-nine patients remained as originally classified (Figure 1).

Of the 31 fatigued patients whose scores improved into the no-longer-fatigued range over the year (Table 4), only one was nonwhite, although nearly one in five of the study population was nonwhite ($\chi^2 = 6.19, P < .05$). Level of education was significantly associated with patients remaining fatigued over the follow-up period ($\chi^2 = 6.05, P < .05$). Those with high school and college diplomas were more likely to remain fatigued than were those with less education. Sex, marital status, and age were not significantly associated with improvement or development of fatigue.

Forty-nine percent of the group that remained nonfatigued were employed outside the home, in contrast to the entire study sample, which had a 36 percent employment rate. Newly fatigued subjects tended to be unemployed (12 of 15), but this and other comparisons of employment status and fatigue category (including change during follow-up) were not statistically significant.

Forty-nine patients initially fatigued by 1984 RIV scores received solely physical diagnoses. Nineteen patients from the 1984 fatigued group had psychological diagnoses (anxiety, depression, psychosis, or stress). The difference

in improvement between fatigued patients with physical diagnoses and those with psychological diagnoses was not significant.

DISCUSSION

The problem of fatigue is a dynamic one with many patients changing status from fatigued to nonfatigued over a one-year period. By 1985, 46 of 145 subjects had changed classification status. Although almost one half of patients were fatigued in 1984, one year later, 31 of 73 fatigued subjects available for follow-up were no longer fatigued. It is uncertain whether the causes of fatigue were eliminated, or whether this resolution over time is the natural history of the complaint.

The original fatigued subjects visited the clinic more often during the follow-up year and received a greater number of new diagnoses than the nonfatigued. These findings underscore the significance of the complaint "fatigue" as a harbinger of future disease as well as a warning sign for increased utilization of medical resources.

The emergence or resolution of fatigue over a one-year period correlated with only a few factors. Persistent fatigue was more common in nonwhites than whites, and in those who had attained a high school diploma, as compared with those who were less well educated. The emergence of fatigue tended to be associated with unemployment, but this finding did not achieve statistical significance. A previous review⁷ viewed fatigue status in relation to employment and found no relationship. Because fatigue might be both a cause and an effect of unemployment, the lack of a significant association is unexpected.

In a different population,¹² significant associations were found between fatigue status and several demographic variables. Risk factors for fatigue included race (nonwhite), sex (female), low education levels, lack of exercise, young children present in the household, and nightly awakening. Few of these variables played a role in the presence, development, or resolution of fatigue in the current study. With regard to education, seemingly opposite findings

were obtained. In the present study, higher educational status was related to maintenance of fatigued status over the year, but not to the prevalence of the original complaint. One explanation may be found in the different socioeconomic groups served by the two study sites. The earlier study was performed with a middle-class population using a university family practice center; the current study evaluated patients from a county health clinic, serving relatively few college graduates. If the complaint of fatigue is less frequent yet more persistent in those individuals with higher levels of education, its significance may warrant additional study.

This patient group, from the lower socioeconomic strata, were waiting to visit their physicians; therefore, caution should be used in extrapolating these results to other populations. Further investigations should clarify the relationship between race, employment, educational status, and the complaint of fatigue. Particularly useful would be prospective studies comparing outcome from specific behavioral and physical interventions between different demographic and diagnostic fatigue groups.

Acknowledgment

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APPENDIX: RAND INDEX OF VITALITY*

1. During the past month, how much energy, pep, or vitality have you had or felt?	(score)
___ (a) Very full of energy, lots of pep	(6)
___ (b) Fairly energetic most of the time	(5)
___ (c) My energy level varies quite a bit	(4)
___ (d) Generally low in energy, pep	(3)
___ (e) Very low in energy or pep most of the time	(2)
___ (f) No energy or pep at all, I feel drained, sapped	(1)
2. During the past month, have you felt tired, worn out, used up, or exhausted?	
___ (a) All of the time	(1)
___ (b) Most of the time	(2)
___ (c) A good bit of the time	(3)
___ (d) Some of the time	(4)
___ (e) A little of the time	(5)
___ (f) None of the time	(6)
3. During the past month, have you felt active and vigorous, or dull and sluggish?	
___ (a) Very active, vigorous every day	(6)
___ (b) Mostly active, vigorous; never really dull, sluggish	(5)
___ (c) Fairly active, vigorous; seldom dull, sluggish	(4)
___ (d) Fairly dull, sluggish; seldom active, vigorous	(3)
___ (e) Mostly dull, sluggish; never really active, vigorous	(2)
___ (f) Very dull, sluggish every day	(1)
4. During the past month, have you been waking up feeling fresh and rested?	
___ (a) All of the time	(6)
___ (b) Most of the time	(5)
___ (c) A good bit of the time	(4)
___ (d) Some of the time	(3)
___ (e) A little of the time	(2)
___ (f) None of the time	(1)

* From Brook RH, et al¹³

Commentary

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Fatigue is said to be present as a primary symptom in one out of every ten patients who present to a family practice.¹ A review of the literature on this subject, however, reveals a surprising lack of specific information. Most studies that have examined fatigue have focused on the underlying cause of this symptom and have concluded that less than one half of patients with fatigue have an underlying physical ailment. Several papers have suggested that the majority of fatigued patients have psychological or emotional problems.^{2,3}

Patients with fatigue are encountered in a variety of contexts by the family physician. Fatigue may present as an incidental symptom discovered only on careful review of systems. For example, patients with viral illnesses will often be fatigued but will not find this symptom noteworthy, as they expect to be fatigued when they have "the flu." Fatigue can be either a presenting symptom or primary complaint. Patients with the chief complaint of fatigue generally cause the physician to consider a differential diagnosis that includes anemia, thyroid disease, diabetes, depression, anxiety, occult cancer, infectious mononucleosis, hepatitis, or chronic renal failure among others.⁴ Finally, fatigue can be a nonspecific diagnosis usually reserved for patients who present with fatigue as a primary complaint but who have no evidence of other medical or psychological diagnoses to explain this symptom. Fatigue ranges from unimportant and self-limited to an important symptom of a life-threatening illness.

In this issue, Valdini and co-workers have made an important contribution to the literature on this subject. Their study examined the symptom of fatigue by screening adult patients in family practice offices using the Rand Index of Vitality as a screening instrument. These patients were then followed for one year to monitor changes in their levels of fatigue and the development of associated medical problems. These investigators have been able to make observations regarding the evolution of fatigue as a symptom that would not have been possible if studied retrospectively. Fatigued patients visited the physician more frequently and were more likely to receive new diagnoses during the ensuing year. Fatigued patients were also more likely to receive a psychological diagnosis in the ensuing year than those who were not fatigued. Of the 73 patients in the fatigued group who were followed up at one year, only 31 were nonfatigued at the end of the year. This finding is important to any physician caring for patients with this complaint.

In 1980 Morrison⁵ published a retrospective study of 176 patients with an isolated diagnosis of fatigue. He dis-

covered that fatigue was a more common diagnosis in single patients than in married patients and occurred in women twice as often as in men. Thirty-nine percent of the patients in Morrison's report had a physical diagnosis, 41 percent had a psychological diagnosis, and 12 percent had both kinds of diagnoses. It is interesting to examine this study in comparison with the paper in this issue. Morrison's study was retrospective and examined fatigue as a diagnosis. The study by Valdini and co-workers was prospective and examined fatigue as a symptom. Morrison's study does not include all patients who complained of fatigue. Patients who had more specific diagnoses were excluded from this study. Because some of the patients identified as fatigued by the Rand Index of Vitality were visiting the physician for reasons other than to complain of their fatigue, the study by Valdini and co-workers probably includes more patients than would have complained of fatigue to the physician. The Valdini et al paper deals with the perceptions and problems of the patients, while Morrison's paper focused on the categories into which patients are placed by their physician. This difference in perspective is at least in part due to the evolution of research methodology within family medicine.

Glenn⁶ has written, "Diagnosis, whatever else it may be, is essentially a social event. It is a process whereby one person [the qualified expert] affixes a classification onto another person [the identified patient]." The paper by Valdini and co-workers provides a useful, although indirect, insight into the natural history of one symptom in family practice. It demonstrates that while often self-limited, fatigue can be a chronic affliction in a significant number of patients. Like all good research, this paper raises more questions than it answers. Why did these patients think they were fatigued? What family and environmental factors were associated with fatigue? How common is persistent fatigue in the general population? These issues are fertile ground for further studies in this area.

Unfortunately, this study does not examine several important facets of how fatigue is dealt with by the physician. It is unclear how many of these patients discussed fatigue with the physician as their chief complaint. What physical and psychological diagnostic labels were given to these patients by their physician? Which factors influenced the physician's decision to order diagnostic tests or to simply follow the patient conservatively?

Valdini and his colleagues have given us a look at how fatigue as a symptom enters the physician-patient interaction, and Morrison has examined the diagnosis of fa-

tigue as an output of this interaction. Studies that specifically examine the way in which patient complaints become processed in the physician-patient interaction and categorized into diagnostic groups will provide insight into the complex process of diagnosis in primary care. Such studies are essential to better understand the physician-patient relationship, which lies at the heart of family medicine.

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